

MCF 3M Opener

A ball is tossed upward from a cliff. The height of the ball above the water is modelled by $h(t) = -5t^2 + 10t + 40$ where $h(t)$ is the height in metres and t is time in seconds.

- a) What is the maximum height reached by the ball?
b) When does the ball hit the ground?

Feb 11-3:37 PM

MCF 3M Opener

$$h(t) = -5t^2 + 10t + 40$$

a) What is the maximum height reached by the ball?

$$h(t) = -5(t^2 - 2t - 8)$$

$$h(t) = -5(t+2)(t-4)$$

vertex

$$\begin{aligned} & \frac{4+2}{2} = \frac{6}{2} = 3 \\ & -5(3+2)(3-4) \\ & = -5(5)(-1) \\ & = 25 \end{aligned}$$

When does the ball hit the ground?

At 4 sec the ball hits the ground.

$$\begin{aligned} h(t) &= -5(t-4)(t+2) \\ &= -5(4-4)(4+2) \\ &= -5(0)(6) \\ &= 0 \end{aligned}$$

Feb 11-3:37 PM

3.4 Solve by Factoring

p 156-163

Zeros - X-intercepts

X values where graph crosses the x axis

$$y = 0$$

roots- solution for a value
sometimes 0 but can be any value

Mar 6-8:00 AM

Solve

$$= a(x-s)(x-t)$$

$$i) (x+7)(x-3) = 0$$

$$(x+7) = 0 \quad x = -7$$

$$(x-3) = 0 \quad x = +3$$

$$ii) 0 = (2x-1)(3x+5)$$

$$(2x-1) = 0 \quad +\frac{1}{2}$$

$$(3x+5) = 0 \quad -\frac{5}{3}$$

$$iii) 2x^2 + 3x - 15 = 0$$

$$2x^2 + 6x - 5x - 15 = 0$$

$$2x(x+3) - 5(x+3) = 0$$

$$(x+3)(2x-5) = 0$$

$$-3 \quad +\frac{5}{2}$$

$$\begin{array}{r} A | M \\ + 1 \quad - 30 \end{array}$$

$$iv) | 2x^2 = x + 6$$

$$12x^2 - x - 6 = 0$$

$$12x^2 - 9x + 2x - 6 = 0$$

$$3x(4x-3) + 2(4x-3) = 0$$

$$(4x-3)(3x+2) = 0$$

$$\frac{3}{4} \quad \frac{2}{3}$$

Mar 6-2:08 PM

p 161-162

q 1, 2ac, 3b, 4a,c,e,

5a,c,e 6a,c,e, 7a,c,e 8

$$2x^2 - 6x$$

$$(2x)(x-3)$$

$$2x = 0$$

$$0$$

$$x-3 = 0$$

$$3$$

Mar 6-2:18 PM

3b)

$$2x^2 - 5x - 35 = 0$$

$$2(-4)^2 - 5(-4) - 35 = 0$$

$$2(16) + 20 - 35 = 0$$

$$32 + 20 - 35 = 0$$

$$52 - 35 = 0$$

$$17 = 0$$

$$LS \neq RS$$

$$x = -4$$

is a root

Proofs

Oct 5-10:30 AM

$$\begin{array}{l}
 2x^2 - 9x - 5 = 0 \\
 2x^2 - 10x + 1x - 5 = 0 \\
 2x(x-5) + 1(x-5) = 0 \\
 (x-5)(2x+1) = 0 \\
 \begin{array}{cc}
 5 & -\frac{1}{2}
 \end{array}
 \end{array}$$

$\begin{array}{r|l} A & M \\ -9 & -10 \\ & \wedge \\ & -10+1 \end{array}$

Oct 5-10:46 AM



Sep 28-7:52 AM